Application N .: 09/997,351 **D cket No.: JCLA8275**

In The Title:

Please amend the title to read as follows:

--DIFFRACTIVE LASER ENCODER --.

In The Specification:

Please amend paragraph [0007] as follows:

[0007] As the techniques of the optical scale growth rapidly, a lot of the related patents have been published. Such as U.S. Patent ~~Application Serial~~ No. 3738753, 3726595, Japanese Utility Model No. 81510/1982, Patent No. 207805/1982, 19202/1982, 98302/1985, U.K. Patent ~~Application~~ GB2185314A, U.S. Patent ~~Application Serial~~ No. 4733968/1988, 4988864/1991, 5079418/1992, 5120132/1992, 5500734/1996, 5574560/1996, Taiwan ~~Application Serial~~ Patent No. 099283/1998, 099284, 096048, all can be seen as the prior art of the present invention.

Please amend paragraph [0027] as follows:

[0027] FIG. 7 is a basic configuration diagram of the diffraction grating linear optical scale according to the present invention. In the invention, the light source 01 is a laser light source or a laser diode and the light emitted by the light source is polarized by the polarizer 02. The P polarizing light passes through the polarizer 02 and the quarter-wave plate 03, is incident onto the planar reflector 04 and is reflected by the planar reflector 04, then follows the original beam path back to the polarizer 02 and is reflected by the polarizer 02. The S polarizing light is

reflected by the polarizer 02, and then passes through the quarter-wave plate 05, and is reflected by the corner cube reflector 06. The corner cube reflector 06 makes S polarizing light having a position shift in the parallel direction with the original incident path. The light beam then passes through the quarter-wave plate 05, is incident onto the polarizer 02 and passes through the polarizer 02 directly. The quarter-wave plate and the reflector mentioned above form a mechanism to rotate the polarizing direction of light $\pi/2$, thus to control the light beam passes through or reflects after entering into the polarizer. The corner cube reflector must be coated with a film to protect the polarizing state in order to have the beam path mentioned above to work as expected. These two parallel lights that are emitted by the polarizer 02 pass through the quarter-wave plate 09 and 10, respectively, are later focused by the convex lens 07, then incident onto the diffraction grating 08, diffract and generate the first .+-. 1 order diffraction light. Wherein the parameters of the convex lens must be selected to have the direction of the first .+-. 1 order diffraction light extremely parallel to the direction of the normal line of the grating plane. The first .+-. 1 order diffraction light subsequently passes through the convex lens 07 and the reflector 11, and returns to the diffraction grating and generates the second .+-. 1 order diffraction light. Wherein the reflector 11 must be located behind the focal point of the convex lens 07 to form an optical mechanism of the corner cube reflector. The second .+-. 1 order diffraction light is combined after following the original beam path back to the polarizer 02. These two linear polarizing lights then are transferred to the clock-wise circular polarizing light and the counter-clockwise circular polarizing light by the quarter-wave plate 12 in the back side, respectively. The non-polarizer 13 then splits these two circular polarizing lights into two light beams having

the same light intensity. The polarizers 14 and 17 polarize each light beam. Wherein the polarizer 17 has a 45-degree decline in relates to the polarizer 14. Thus, the signal outputs from these two polarizers have a 90-degree phase difference. This is the basic source of the PQ orthogonal signals. The light detectors 15, 16 and 18, ~~18~~19 that belong to each polarizer receive and transfer the light intensity into the voltage signals. The circuit portion subsequently subtracts the constant portion from the voltage signal that is derived from the light detectors 15 and 16 to obtain a pure Q orthogonal signal. The circuit portion also subtracts the constant portion from the voltage signal that is derived from the light detectors 18 and 19, to obtain a pure S orthogonal signal. The further comparison and the electronic fine division obtain the displacement vector and the velocity vector of the object that has grating attached on it.

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Proposed Amendment To The Drawings

FIGs. 1-6 have been amended by adding --PRIOR ART--.